OFFICE OF MANNED SPACE FLIGHT PROGRAM DIRECTIVE	M-D MA 1400.103 (Project)	DATE JUN 16 1971

APOLLO PROGRAM DIRECTIVE NO. 8B

TO : DISTRIBUTION FROM:

Rocco A. Petrone JUN 16 1971
Rocco A. Petrone
APOLLO PROGRAM DIRECTOR

SUBJECT : Apollo Flight Readiness Reviews

OFFICE OF PRIME RESPONSIBILITY: Apollo Test Engineering (MAE)

REFERENCES: (a) Apollo Program Directive No. 6B dated December 2, 1968, Key Inspection, Review and Certification Checkpoints and Their Documentation

(b) Apollo Test Requirements, NHB 8080.1A

I. PURPOSE

This directive defines the review procedure and requirements for the Apollo Program Director's Flight Readiness Review (FRR) to be conducted prior to each Apollo mission. It also defines the reporting procedure for FRR open actions and open work resulting from and developing subsequent to each FRR. The FRR will be conducted as a consolidated review of all hardware, software, and operational elements to assess their mission readiness. Reference (a) shows the relationship of the FRR to other Apollo hardware development and key inspection, review and certification checkpoints.

II. SCOPE

The FRR covers the readiness assessment of the spacecraft, launch vehicle, ground support equipment (GSE), launch complex, launch support, all operational elements, flight experiments, all software including computer programs, and all safety and emergency provisions and procedures. The reporting procedures for open actions and open work cover the period between the FRR and launch.

III. FRR GUIDELINES AND SECRETARIAT LETTERS

Approximately six weeks prior to the FRR, a guidelines letter will be prepared by Apollo Test Engineering, coordinated with the cognizant Apollo Program Office Directorates and issued by the Apollo Program Director. It will contain special requirements not covered in subsequent paragraphs of this directive and a preliminary agenda identifying topics and time allotments. Approximately one month prior to the FRR, a secretariat letter will be issued establishing a secretariat and the procedures for conducting the FRR.

IV. FRR SCHEDULE

The FRR will normally be held subsequent to the Flight Readiness Test (FRT) and prior to space vehicle hypergolic loading and is subsequent to Center Pre-FRR meetings. The exact FRR date will be established in the FRR Guidelines letter.

V. ACCEPTANCE OF PRE-FRR ITEMS

The Assistant Director, Apollo Test Engineering, will attend each Center Pre-FRR acting for the Apollo Program Director, and will accept items he determines to be completed and not requiring the Program Director's review. Such items will not appear on the final FRR agenda except for problems which may occur between the Pre-FRR and the FRR. Buy-off will be accomplished by a meeting subsequent to the Pre-FRR or by TWX within two working days following the Pre-FRR.

VI. FRR PRESENTATION REQUIREMENTS

A. Responsibility for Major Agenda Items

The responsibilities for major agenda items are as follows:

1. Review Objectives - Apollo Program Director
2. Mission Summary - MSC Flight Operations Director
3. Spacecraft* - MSC Apollo Spacecraft Program Manager
4. Lunar Roving Vehicle - MSFC Saturn Program Manager
5. Launch Vehicle** - MSFC Saturn Program Manager
6. Launch Complex - KSC Apollo Program Manager
7. Launch Operations and Support - KSC Launch Operations Director
8. MCC Readiness - MSC Flight Operations Director
9. Network Readiness - GSFC Network Director
10. Flight Crew Readiness - MSC Flight Crew Operations Director
    - MSC Medical Research & Operations Director
11. Recovery Readiness - MSC Flight Operations Director
12. Operations Summary - Mission Director
13. Action Item Summary - Apollo Program Director

*Includes scientific equipment and operations.
**Includes POGO assessment.

B. Delta Concept

The Center presentations at the FRR will employ a delta concept from previous Apollo missions in satisfying review requirements. It is essential, however, that the presentations completely identify the baseline for the deltas.

C. Presentation Emphasis

Presentation topics and scope should be that required to provide the Apollo Program Director with the information he needs to make a judgement as to flight readiness. Agenda topics, consistent with the Pre-FRR buy-off, will normally:

1. Commence with an overall readiness summary, be followed by appropriate supporting detail and conclude with a readiness assessment.

2. Emphasize recent significant resolved problems when necessary to establish confidence.

3. Emphasize significant unresolved problems and constraints to the mission.

4. Within the scope of C. 2. and C. 3. above, cover problems or changes in areas such as:

   a. Hardware and software checkout and test operations.

   b. Hardware configuration.

   c. Computer program verification.

   d. Waivers and deviations.

   e. Development, qualification, and reliability testing.

   f. Critical life components.

   g. Launch critical spares.

   h. Shortages and open work.

   i. System safety.

   j. Launch and flight preparations.

   k. Single Failure Points (Category I and II)

   l. Sneak Circuits

VII. FRR DOCUMENTATION REQUIREMENTS

A. Prior to the FRR

At least one paper copy of the final Center Pre-FRR documentation is required by Apollo Test Engineering (MAE) immediately following each Pre-FRR. At the same time, MSC and MSFC will also supply MAE with information as to the status of Certificate of Flight Worthiness (COFW) endorsements. Endorsements will be those required by reference (b) and the centers.

B. At Time of the FRR

Vu-graphs will be used at the FRR and will be retained by Apollo Test Engineering (MAE) until after launch. Thirty paper copies of the vu-graphs will be provided to the APO Secretariat immediately prior to the FRR by the Center official responsible for each oral assessment. MSC and MSFC will provide MAE with an updated status of the COFW endorsements for inclusion in the FRR Minutes.

VIII. FRR CLOSEOUT REPORTING REQUIREMENTS

A. Weekly Reports to the Apollo Program Director on Status and Closeout of Open Actions and Open Work

The Apollo Program Managers will report by TWX/Letter with LDX each Thursday the status and closeout of open actions designated at the FRR by the Program Director and the open work identified at the FRR by the Program Managers and recorded in the FRR Minutes. They will also report on open actions designated subsequent to the FRR by the Program Managers.

1. Open actions designated at the time of the FRR will be numbered sequentially by Mission Number-Center Letter-Center Sequence Number. (For examples, 15-K-1 for the first KSC Apollo 15 open action, 15-H-1 for the first MSFC (Huntsville) action and 15-T-1 for the first MSC (Texas) action.) Open actions involving two centers will be assigned two numbers, one for each center.

2. Significant open actions designated subsequent to the FRR will be reported to the Program Director. Routine open actions that can be corrected prior to the launch and actions which do not delay the launch or violate space vehicle or launch complex configuration integrity or cause basic changes to mission rules, flight plan, or abort and alternate mission plans, need not be reported. Each new open action reported will be given a brief title/description, an estimated completion date, and a number which follows sequentially those assigned at the FRR. (See preceding paragraph for numbering.)

3. Reporting of open actions being rescheduled will include the reason for rescheduling, actions planned for closeout, and the new closeout date.

4. Reporting of open actions closed out will state fully the basis for closeout, that is: actions taken, data obtained, and determinations made.

5. Launch Vehicle open actions which entail joint MSFC-KSC responsibilities and spacecraft open actions which entail joint MSC-KSC responsibilities will be reported closed out by MSFC and MSC Program Managers respectively based on coordination with the Program Manager at KSC. Closeout reports on these open actions will indicate the KSC Program Manager's concurrence.

6. Open actions will be identified by the numbers assigned at the FRR. Open work will be identified by the numbering established in the FRR Minutes.

7. Reporting of open work closed out will state the basis for closeout if the work is considered to significantly affect configuration integrity, or if the basis for closeout is other than completion as planned at the time of the FRR.

B. Weekly Reports Information Copies

Information copies of these weekly reports will be sent by the issuing Center to the Program Managers at the other Centers.

IX. ACTION

This Directive shall be implemented by the Apollo Program Managers to insure effective planning for and conduct of an FRR for each Apollo mission and for FRR reporting.

X. CANCELLATION

This Directive supercedes APD NO. 8A issued December 13, 1968, and Addendum 2 dated October 8, 1969.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER
KENNEDY SPACE CENTER, FLORIDA 32899

REPLY TO
ATTN OF: AA-AVO-3(71-154)

JUL 8 1971

MEMORANDUM

TO: Distribution

FROM: AA/Manager, Apollo-Skylab Programs

SUBJECT: Apollo Program Directive No. 8B, "Apollo Flight Readiness Reviews"

APD No. 8B, copy attached, has been received and reviewed by this office. As discussed in the attached briefing note, most of the changes have already been incorporated in KPD 8620.1, "Apollo/Saturn Flight Readiness Reviews." A change to this KPD is being prepared to cover the new status reporting interval and the addition of Sneak Circuits as a topic.

Robert C. Hock

Robert C. Hock

Distribution:
Apollo-Skylab Distribution "S"

Enclosures
1. APD #8B
2. Briefing Note to Dr. Debus

AM

JUL 1 1971

Dr. Debus

SUBJECT: Apollo Program Directive No. 8B, "Apollo Flight Readiness Reviews"

The subject directive dated June 16, 1971, reduces FRR documentation requirements to reflect previously negotiated informal agreements with KSC, MSC and MSFC, changes the reporting interval of FRR action item closeout from daily (TWX) to weekly (LDX) and adds Launch Critical Spares, Single Failure Points and Sneak Circuits to the agenda.

Center compliance with APD 8B requires that KPD 8620.1/AA, "Apollo/Saturn Flight Readiness Reviews" be amended to call out the new status reporting interval and to add Sneak Circuits to the list of LRR and FRR topics for presentation emphasis. All other changes have been previously incorporated in the KPD.

for William H. Rock
Robert C. Hock
Manager, Apollo-Skylab Programs